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Vol.3 No.3 MARCH 90

The

COMPUTER PAPER

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high-tech sound gear. On the hardware side will be featured the Backlund 386/25 processor and T-Test Editor, Roland MT-18 module, and the CS-18 stereo monitor amplifier. Software will include Music Printer Plus Version 3.1, Gatesmark 3.0 and other desktop music systems. The demonstration will be held March 22th, from 7-9 p.m. Contact Tim at Creative Music (504-136) or at Tin-Tech Computers (503-4775).

FFHoflinks All Major Accounting Packages To Lotus 1-2-3

Spex Systems Corporation, recently announced the availability of *FF The Financial Reporter for Corel Prime and SBT* accounting systems, and the upcoming release of *FF for the Solomon 31 and Phoenix* systems. *FF The Financial Reporter for Acufac* has been successfully selling for over six months.

FF "hot links" the accounting system's general ledger to a Lotus 1-2-3 spreadsheet. The "hot links" system offers significant advantages over both conventional report writers and the "batch report" systems of data transfer to spreadsheets. The process of building the report is interactive, so the user is seeing what he is getting at all times. As well, and unlike general ledger batch systems, in the same spreadsheet, it can be used to make it easy to do consolidations. Finally, cells in the spreadsheet can be mapped directly to general ledger data from through column headings in the spreadsheet, so that producing reports for new time periods is as easy as adding a column heading and pressing the computer keyboard function key F8, which is used by Lotus 1-2-3 to recalculate.

FF is available from Spex Systems Corporation, 4800 N. 17th Street, Suite 20, Vancouver, BC, V6E 4A2 (604) 684-8773 or (800) 663-5163, or many dealers.



The General's General Contractors An Estimating Edge

Many contractors are using spreadsheet programs such as Lotus, Symphony or Excel to do their estimating. This is because spreadsheets are very similar to the general contractor's manual takeoff sheets. "The General" combines a custom-designed spreadsheet with a powerful database of material descriptions and prices to streamline the process for general contractors.

"The General" helps contractors easily adapt to computerized estimating. Estimators with little computer knowledge will be up and running very quickly.

The software's developer, a contracting estimator himself for a number of

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3 CARMEN SANDRICO - WHERE IN TIME Carmen and her gang are in a race to find the secret of the "where" in "where" 30°	8 Sea City - 42° An amazing collection of the best of the world's sea cities.
4 Death Dragon 3 32° A great game for the 32-bit system. The best of the best.	9 Ship Game 10 - 40° A great game for the 10-bit system. The best of the best.
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years, has managed to take the features that make spreadsheet so useful and added features that are specific to construction.

The program's utility can be considerably enhanced by pairing it with ESTIM-MATE, a blueprint digitizing system. This little box is approximately eighteen inches long, with two sound sensors at either end. With this system, a digitizing pen creates a small beep when placed on a point of a blue print. The two figures are relative locations by triangulation since it knows the fixed distance between its two sensors. With

ESTIM-MATE, it is possible to quickly enter measurements from a blueprint. After saving this system quickly download and calculate a sample floor plan, it is hard to see how contractors would operate without this type of setup.

"The General" costs \$197 plus tax. The ESTIM-MATE digitizing system is \$2,970. *Armadillo Construction Estimating Systems* (7345-1738 St., Delta, BC) offers a 30-day money back guarantee. Call (604) 594-8717.

**ADAM Computer Owners
Hold Orphan's' Convention**
(Toronto, Canada)—ADAMCON 02,

the second annual international convention for users of the Colson ADAM computer, will be held at the Ramada 481/880 hotel in Toronto, August 15th through 18th, 1990. User group members and major suppliers from across Canada and the United States have already indicated intentions to attend.

The Toronto ADAM convention follows on the success of the first ADAM convention, held in Orlando, Florida, last October, which drew delegates from as far away as Vancouver Island, B.C.

The conference will cover several two days of sessions covering a wide range of

topics useful to ADAM owners, including operating systems, software, new hardware, intercommunications, graphics, and games.

For information on attendance visit *John Goughan Chairman Ramada Club, 22 Adelaide Blvd., Toronto, Ont. M5A 1S6, phone (416) 783-6754 after 7:30 p.m. (EDT) weekdays.*

Data-Shield Protocols Modem/Fax Transfers

If your Modem shares a phone line with a telephone, then data distortion, loss, or even complete disconnection can result from someone attempting to use the phone during data transmissions.

A new protective switch made in North Vancouver by General Engineering Corporation, this easy-to-use and potentially computerized. The switch, called "Data-Shield," is provided with an adhesive mounting to fit on or close to the telephone jack. The phone is then plugged into the DataShield which in turn is plugged into the wall jack. With the DataShield installed, it is impossible to use the phone when the line is "busy" with a Modem or Fax transmission in progress, and data interruptions are no longer a danger.

The DataShield switch requires no batteries and comes with a telephone warranty. During the introduction to the market of this new device, the manufacturer offers a "money back if not satisfied" guarantee. The DataShield is priced at \$25.

For more information contact David McDonald at 903-3212 (Fax 903-3290).



Nelson Mandela Races South Africa By Fax

This may be a hard-hard story, but we thought it was an interesting commentary on technology affecting people everywhere. *Faxline*, the weekly biweekly newspaper of the American Faxline Association, contains the following in its February 5, 1990, issue regarding Nelson Mandela.

"What unexpected events have been taking place in South Africa. To quote *The New York Times* quoting Peter Dink Uys, the country's best-known political analyst:

"Who would have thought that a faceless man with a fax machine could map the country from a prison?"

"In fact, the man who has not been seen in public for 17 years has been negotiating, no less, not only the terms of his own release but the outlines of what could be the future of South Africa."

Thanks to Ray Kinnear for this story. Ray Kinnear is a VSE company which is merging with Pannett Communications Co., a manufacturer of low-cost fax boards. (604) 681-7906.

First there were desktop computers. Then came the laptops. Each offered something that the other did not.

But now there's something that combines the best of both worlds. Because now there's a portable that's easy enough to take with you, yet powerful enough to double as your office computer.

You may say that sounds like a split personality. We say it sounds like the new Altima One.

Altima One can run MS-DOS6 and OS/2 with ease. Plus it features an impressive 80286 microprocessor that speeds to a full 16MHz, without ever gasping for breath.

What's more, Altima One comes with items that other manufacturers call options: like a built-in 2400-baud modem. Or an optional mechanical mouse with a compartment for storage. Or a PC-compatible expansion slot.

Altima even remembered to give you more memory. Because with Altima One, you can expand from one megabyte to five.

Add to this the paper-white LCD backlit display, a full function 101-key detachable keyboard with numeric keypad



a 3 1/2", 1.44 megabyte internal floppy disk drive, plus a 40 megabyte hard drive, and you'll realize why the Altima desktop/laptop is one heck of a computer. Or is it two?

Westcoast Computers

1915 Lansdale
North Vancouver, B.C.

986-7680

Split personality.



Correction

Protection in the word

In the February issue of *The Computer Paper*, Newsbyte considered an item

entitled "Minisize File For Backup?" The item incorrectly stated within the article that Minisize has filed for Chapter 11 protection from its creditors, not bankruptcy. The Longmont, Colorado company continues to operate, sending

representatives to Canada on more than one occasion this year to reassure distribution and customers alike, and to promote new products.



PC Buddy System Saves On Unused PC Resources

Instead of actually saving money, many microcomputers are a drain on the business that own them. A typical \$6,000 or \$7,000 microcomputer system, with many systems cost anywhere of \$15,000 to \$20,000, is used only 30 per cent to 40 per cent of the time. Many of these microcomputers store a lot of important information that only one person can get access to while the rest of the office continues to work usually or even for the person with the computer to provide them with information. The problem is to provide them with a method where many people can access an existing PC for a low cost and which will work with all software.

Enter the Buddy System. The PC Buddy System by Research consists of a circuit board enclosed in a small box which allows you to attach multiple keyboards and monitors to your PC, XT, AT, or SBC computers. The PC Buddy System does not provide multitasking operation, but rather allows an eight-position switch to select which station has control of the computer. Information on the front panel of each station shows whether the system is free or busy; a push button on the box allows an operator to take control of the computer while all other stations are inactive. The remote stations are attached to the master station via cable and are guaranteed to work at distances of up to 500 feet but have been tested to work at greater distances.

A start-up for the master and first remote station costs \$249. In addition, buyers must purchase an additional standard keyboard and monitor, which are readily available for under \$200. Additional remote units are \$139. *Research Distributing Inc., Suite 103, 8031 Redbank Road, Richmond, BC V6V 1P7 Tel. (604) 273-1007*

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Computer Paper



A computer paper roll that holds your computer paper and other components. Doppler is a large volume to buy 3M Data Cartridges since we are a stockist and sell from direct.



And The Winner Is...

The winner of *The Computer Paper* draw for an Atari Portfolio portable computer is Pate Revell of Port Huron, B.C. The draw was held on February 15th and included all microcomputer entries received since the beginning of the contest in October. Congratulations, Pate, we hope you get lots of use out of this great little computer.

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and on the Apple Macintosh at the Windows sold in Britain for \$15-17.

The OS/2 version of Northwest Publishing will be available at the time and will be shipping before the end of February. Consensus spokesman Michael Strassfeld told Newsday. The Macintosh and Windows versions are in beta testing and should be shipping in April, Strassfeld added.

Northwest allows people using any of the operating systems supported to communicate with any other user over a variety of communication links. Strassfeld said there will also be able to send mail through Northwest. Corporate gateways to other electronic mail systems such as Professional Office Systems (PROFS) or on IBM networks.

The software for OS/2, Windows and Windows will cost about \$2,500, Strassfeld said. The OS/2 version does not support Presentation Manager as present, he added, but that support is planned.

Guests: Michael Strassfeld, Consensus Software 604.688.0588.

Canada

Promise Seen In Canadian Software Funding Idea

TORONTO, ONT. 1990 Jan 18 (UPI) — Canadian computer industry and leading groups have created such consensus around a proposal for financing software research and development in the country.

The Phoenix program, led and by Raymond Bingham, a president of Toronto software developer Alcan Research, calls for government-backed loan-loss for startup software developers. Software companies with sales between C\$5 million and C\$50 million would enjoy enough insurance to place their development projects "acceptable return" over five years. "Banks would lend 80 percent of the money needed, and the Canadian government would guarantee 65 percent of

each loan.

Trill Bill, president of the Canadian Association of Data, Professional Services and Software Organizations (CANAPSSO) in Ottawa, said now it would depend on the governments, the banks and the software industry. But, he said, "it's deep for anything that might improve the financing situation, the small software firms in Canada. We think it's important that [Bingham] has taken the initiative in getting something together."

Charles Wiggins, president of the Information Technology Association of Canada (ITAC) in Toronto, also commended the initiative, saying it deserves serious attention. He said any such program would need professional assistance to make sure "many of these firms are eligible for the program," he said. But he suggested a pilot project might help determine the program's viability.

John P. Langer, director of commercial affairs for the Canadian Bankers' Association, said his group has shared the proposal and is working in among its independent bank members. "It merits study," he said, "and it is on our agenda for early February." Contact: C. Wiggins, ITAC, 416-425-6710; Canadian Bankers' Association, 416-942-6070; Stephen Bingham, Alcan Research, 416-592-5100.

Corel Income Jumps

OTTAWA, ONT. 1990 Feb 8 (UPI) — Net income at Corel Systems, developer of the award-winning Corel Draw software, increased by a factor of 1.7 in 1989.

Corel has reported net income of C\$26 million for the year ended Nov. 30, 1989, up from C\$15,461 in the previous year. Earnings, as previously reported in Newsday, climbed from C\$26 million in C\$21.7 million.

In a prepared statement, Chief Financial Officer Michael Macdonald said Corel is well on its way to meeting its mid-year goal of total revenue for 1990. Contact: Michael Macdonald.

while at Jennifer Prokes, Corel Systems, 416-728-4700.

General

Morris Found Guilty In Worm Trial

NEW YORK, N.Y., 1990 Jan 22 (UPI) — After only five hours of deliberation, the jury in the worm trial of Robert Stephen Morris, a 33-year-old former Cornell graduate student, found Mr. Morris guilty of

computer tampering in the Internet network computer study of November 1988. Mr. Morris, who has admitted creating and releasing the worm designed to spread and destroy itself, will return to court as an alleged co-specified case in that sentencing.

Morris has been convicted of a felony under the 1986 federal computer fraud and abuse law. Robert Morris, who continued working in the computer industry while awaiting his trial, faces a maximum of three years in jail and a \$250,000 fine. He could also be ordered to pay restitution.

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Strachan was awarded the prize when it was specifically chosen to build a system with maximum computer expense, would be confidential and then cover the entire cost as physical damage was involved. Since damage to the 1486 was no longer to run in actual prosecution.

Both groups have apparently been wrong, but only the results of the lawsuit appear will show whether the law is actually written well enough to withstand judicial scrutiny at higher levels.

Norfolk has been involved on his own recognition, with the same as seen in the case on February 27 when U.S. District Judge Edward Merion has scheduled a hearing where defense counsel can make new motions, and in which one date will probably be set for the final sentencing.

'Aids Disk' Man Arrested In The U.S.

WILLOWICK, OHIO, U.S.A., 1989 FEB 29 (NS) — Joseph Louis Peppi, a 39-year-old anthropologist, has been arrested at his home in Willowick, Ohio, in connection with the AIDS information disk mailed to more than 90,000 PC users — predominantly in Europe last year.

The arrest follows a limited-the-venue investigation by four Cleveland FBI detectives, headed by Detective Inspector John Austin, who had been working long hours in pursuing the AIDS disk case. Sources suggest that further arrests are now quite likely.

As previously reported by Newsday, the AIDS disk was mailed from London to at least 90,000 PC users in Mid-December last

year. Preliminary investigations revealed that a group of men had created a post office box in Panama and in London in order to obtain mailing lists to post the disks out to unsuspecting PC users.

The disk itself seems to cost and use the AIDS information program, making a passing reference to what looked as if it might be a complex startup agreement. On closer inspection, the agreement contained the user to paying a fee to use PC-Coping Corporation in Panama.

The AIDS program, meanwhile, encrypted and coded the user's hard disk directory to such a way as to make the PC useless. In fact, industry sources had suggested that the disk was a thinly veiled extortion campaign, designed to persuade panicked PC users to pay money in a post office box in Panama.

Peppi's arrest, however, appears to have changed this thinking. Detectives are now building a Peppi-style mail, providing a personal enclosure. According to the Associated Press, Peppi is already providing evidence for a proforma normal condition.

The new source now suggests that, when arrested, Peppi was in the process of preparing for a mass mail-out of two million AIDS-style disks. If true, then the actions of the FBI and London's Scotland Yard computer virus division have almost certainly saved the computer industry several hundred million dollars worth of damage.

According to Guy Brown, computer journalist and editor-in-chief of PC Guide, a UK computer magazine, "if the AIDS program could have taken place, it was just now, then it would have caused far more damage."

"The thing discussed the day, and almost did, was considerably quickly in the way the online computer community. It is hard to have been for convincing, then the industry really would have been insurers," he said.

IBM World

Print Two Pages On One Sheet With Trexner

ALAMOGA, CALIFORNIA, U.S.A., 1989 JAN 29 (NS) — Trexner, Inc. has announced the Trexner D, a memory-resident software utility for the HP DeskJet printer. Trexner D24 allows printing software to print two pages on one sheet of paper.

The utility also provides another option: reduction of reports and documents to allow existing software to print data in 40 columns for printed documents. The software requires IBM PC-compatible systems. It is priced at \$49.95. Call 615-759-2900.

More Intel 486 Bugs Found

SAN JOSE, CALIFORNIA, U.S.A., 1989 JAN 30 (NS) — An unusual design flaw has been found in Intel's 486 chips, which is either likely to affect all 486-based products.

Intel says the latest bug, which affects 486 systems (extended memory standard architecture), can be found in microcode within a "workaround" scheme involving a memory comparison process. Intel now says it is "likely" without requiring replacement of the 486 chips already installed in computers.

Still, the bug will cause a delay in shipment. The Intel/Intel/Packard-Bell Company, which has planned to ship 486-based models in early February, Packard-Bell has said the bug will delay shipments one or two weeks. Company has not said when its customers will be notified, but simply says they will be in the "first queue."

Last fall, Compaq engineers discovered a flaw in the 486 involving certain mathematical procedures, which has since been corrected by Intel.

Microsoft's Readline

Windows 3.0 For April

REDMOND, WASHINGTON, U.S.A., 1989 FEB 29 (NS) — Windows 3.0 will ship in mid-April, Microsoft has learned from sources close to Microsoft.

A number of third-party developers will receive computer simulations, though Microsoft has said that all self-developed Windows 3.0 programs will work with the new version.

Rather than requiring different Windows versions for 486 and other machines, the new version will allow users to use the previous ones and have accordingly. Applications which have been approved for use under Windows 3.0 will receive a software flag to indicate this, so will be able to run if the application can correctly be processed under the old version.

The new version of the system is said to give the microsystems a "Windows 3.0 appearance" and Microsoft is encouraging developers to have updated products.



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EPA Panel Approves Substitute For Ozone-Killing CFC-113

WASHINGTON, D.C., U.S.A., 1990 JUN 19 (NS) — The U.S. Environmental Protection Agency panel has approved the first substitute for chlorofluorocarbon 113 (CFC-113), a chemical used to clean computer parts, but also known for depleting the nation's ozone layer.

The EPA's panel of 150 industry experts has verified that Genetech 200, made by Allied Signal Company (Aerospace Division), does not pose a threat to the ozone layer. Genetech is a compound of hydrofluorocarbon, or HFC-23, which are said to be safe.

If further EPA testing — underway now — verifies the findings, the agency will give

manufacturers approval for widespread use.

International Alliances Forming Chip Ventures

TOKYO, JAPAN, 1990 JUN 19 (NS) — To finance and hasten development of highly integrated compact memory chips, collaborative ventures among American, European and Japanese makers are popping up around the world.

The king of one-megabit DRAMs — Toshiba — and U.S.-based Motorola will start the production of four-megabit DRAMs in their memory, Toshiba Semi-conductor, in 1991. Meanwhile, Intel has entered in new supply of memory chips by cooperating with Nishikawa Industries. The firms have agreed to establish a joint-venture called Intel/Nishikawa DRAM Fabrication, in Santa Clara, Calif.

Also, to meet the 10MB/sec memory chips under the same level, SMI is reportedly going to provide 16 to 32 chips to Intel rather than its another firm Micron.

To-date most prominent on 16-megabit and faster 64-megabit general purpose memory chips, the industry is expected to continue the collaboration. The complete list DRAM race are now Hitachi and Texas Instruments, Dell and Samsung of West Germany, and Mitsubishi Electric which is expected to sit up with AT&T.

Computer Company Profits Cut In Half

STAMFORD, CONNECTICUT, U.S.A., 1990 JUN 5 (NS) — The Gartner Group research company says computer makers

profits were cut almost by 50% from 8.7% of sales to 5.5%.

Gartner Research Analyst Randall Bremer pointed out computer makers could have to stop increasing the higher profits in 1990, as U.S. demand continues to slacken. The slowdown trend was more pronounced in big companies such as IBM and Texas than in small companies such as Sun Microsystems.

But there were success stories, including Compaq Computers, Hewlett-Packard, and Novell on the list. Contact: Gartner Group, 300-965-3095.

Unix

Wings Files For NeXT

MENLO PARK, CALIFORNIA, U.S.A., 1990 JUN 15 (NS) — Information Software Inc. has released Wings, a graphic user-interface designed to attract clients from Information's On-Line database while using NeXT computer systems.

The product enables users to access data directly into Wings without an Informatica's Hierarchical programming language, but its functions given users the power to create a customized graphical database application.

Advanced representation of Wings on NeXT including NeXT real-time system disk is available through Informatica's exclusive commercial distribution, the 2000. Customers had place to distribute Wings via its electronic distribution scheme for 2000. Call 650-950-4114.

Unix International Unveils New Upgrade Strategy

NEW YORK, NEW YORK, U.S.A., 1990 JUN 15 (NS) — Unix International, engineering arm of AT&T's system of Unix, called System V, unveiled its strategy for future upgrades of the System V architecture. Unix System V technology was previously unveiled in Washington, D.C., New York, Brussels, Belgium, and Tokyo, for Unix users in North America, Europe and Asia.

One key feature is a higher security option, including rigorous system authorization access, data administration and stream. Unix, particularly its previous versions, have been increasingly concerned about such possible intrusions. Another feature of the Roadmap is a multiprocessing architecture that will allow users to expand the management of its security and enhance access to a single range of data. The most flexible computer architecture is designed to help make data management, including data synchronization and access, across processing. The feature will allow several languages to be used, helping companies dealing in international environments or expanding their foreign operations.

The multiprocessing architecture can produce multiple documents in different languages, such as Japanese, Korean and Chinese.

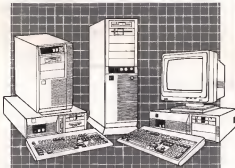
Open Desktop Finally Ships

SANTA CRUZ, CALIFORNIA, U.S.A., 1990 JUN 5 (NS) — Santa Cruz Operations has announced that Open Desktop, the graphical user interface for Unix-based RISC and RISC-based PCs with either an industry standard, extended industry standard (EISA), or Micro Channel Architecture bus, is shipping. The single, multiplatform package, compatible with 320 Unix System V.2/386 release 5.2, the OS/2/386 and X Window System-based graphical user interface with Microsoft Windows and Process-View Manager-compatible operating, LAN Manager/2, clients, TCP/IP and NFS networking services, X.525 database management capabilities and complex DOS under Unix system integration.

The single-user license will be \$1,000 (when released) to the first quarter.

386 and 486 32-bit software developers nationwide are creating software products that will run in the Open Desktop environment, ensuring that they will not be locked user interfaces from product to product.

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studio in Macintosh software products. They include ActiMedia (Owens), Axxis, France Technology (Brennan), GenProSoftware (Brenn), Compuser Software (CAG/CAG), Crossfield Technologies (Dipertorio), Human Computing Resources (H2Tech), Ingres (Ingres SWL, IBM/MSL), Transpac Technology (PG/Ingres), MapInfo (MapInfo), Wang (Wang Technology and Wang WFO), and Workshare (Lynn (Lynn/WTF)).

RISC Sweeps Japanese Workstation Market

YOKO, JAPAN, 198 JAN 30 (RE)—IBM, as evidenced, distribution of computer systems among the Japanese RISC workstation market.

One of the leading RISC suppliers, Hitachi Ltd., Musashino, which is competing for the top 50% against SUN/Apple of Tokyo (Hitachi/Hitachi) and Sony Inc. in Japan, has predicted that RISC-based machines will make up 50 percent of its total shipments in fiscal 1990.

The firm took the initiative with RISC work-

stations and expanded the RISC market from GAO (computer-aided design) and CAM (computer-aided manufacturing) to the financial market this year. Before the release of SPARC-based, RISC-based workstations made up less than 10 percent of the shipments, but now 50 percent of the machines shipped are RISC-based.

The RISC 161 market in Japan is rapidly growing since RISC architecture is seen to offer superiority in distributed processing and high performance at a lower cost. The RISC market is expected to amount to 10,000 units this year in Japan, but which SUN, IBM, and other RISC makers will vie for the largest share.

IBM Reveals NextStep

WHITEPLAINS, NEW YORK, U.S.A., 1989 FEB 3 (RE)—IBM, along with NEXT, Inc. has announced the NextStep RISC-based AIX, AIX is IBM's version of Next.

NextStep, which was introduced in 1988, plus AIX, can be better produced through applications software. In four segments—the

Application Kit, Interface Builder, the Window Server, and the Workspace—allow customer applications to be produced rapidly. Steve Jobs, NEXT's chairman and president, predicts that Unix will be a significant operating system for the 1990s. Steve Jobs says that Unix has been complex and therefore applications users, like jobs help machine plus will be an undesirable combination.

NEXT, which last year put \$100 million in equity financing through Citicorp for a 50% share, is shipping 1,000 of its RISC-based systems each month according to Jobs. The company's offerings, however, have not been seen from Apple, Sun, and others, plus the right interests of academics. NEXT's main market, Citicorp, IBM, and other RISC-based systems, NEXT, 212-940-4848, or AIX or NextStep, NEXT, 212-940-1200.

IBM Re-enters Workstation Market With System 6000

ATLANTA, GEORGIA, U.S.A., 1989 FEB 25 (RE)—IBM re-enters the workstation power competition around the world, IBM made its latest

move to crack the market for academic workstations with the System 6000, a RISC-based system under IBM's AIX operating system which, it claims, is the finest such system in the world.

Which about 250-unit of the machine are in use in academic departments was announced May.

In the days before the announcement, IBM's stock rose sharply, reflecting the effects of David Burshtain (Lambert's) Chapter 11 filing, as stock investors spread news the new machine can do.

In one AIX is demonstrated, the early-level POWERStation 327 was able to run a complex Mainframe set in 1 minute, 41 seconds while the RISC-based system took 30 minutes. The machine can handle 21 million instructions per second and performs 3.5 million floating point calculations each second, with 5 instructions processed per cycle. That's the low end machine, with a list price of about \$12,000.

For those, new positions of the System 6000, an IBM reader, said, "The capability of this machine is incredible. IBM has a coup on

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MFLCOPS (at 25 MHz)	3.5	1.2	1	7.4

Translations: *ATTC* = Reduced Instruction Set Chip (both the Motorola 68040 and the Intel 80486 are CISC or Complex Instruction Set Chips). *MIPS* = Millions of Instructions Per Second, *MFLOPS* = Millions of Floating Point operations per Second. All performance figures claimed by manufacturer. Some like News and IBM cross release.

available for Spreads/1000 which QIB spread allow up to 200 users to access the exchange simultaneously.

Genoa, headquarters in Rochester, New York, says that the company's ProPlan automated mapping and facilities management program will be available for the new IBM workstations. This software is used by a thousand companies to help automate the creation of maps which show the location of utility lines.

Toronto-based Alias Research's Alias 3D industrial design graphics software will also run on the new computers. Alias's software is used to speed industrial design especially in the automotive arena where it is used by Volvo, Volkswagen, BMW and General Motors. Sony, Winchell and Microsoft also major Alias users in the electronics field. Contact: Alias Corp., 617-579-6600, 85551, Cadiz, Ohio 44203. Quality Systems Inc., 714-751-7071, Brea, 714-422-1250 and Alias Research, 416-603-6191.

OPINION

Courting A New Climate

By Barbara Morgan

Clearly, the U.S. electronics industry is picking up overwhelming evidence of negligence that could reflect epidemic-scale disease on Canada and the U.S. At the top of the pile are new findings that suggest Silicon Valley — the design and development center for the Information Age — may be the world's leading hot spot for the moon-melting solvent called CFC-113.

The air samples were taken near several electronics firms and analyzed by J. Sherwood Rowland, the world's renowned atmospheric chemist. Rowland discovered, back in 1973, that chlorofluorocarbons (CFCs) shed stratospheric ozone. After years of collecting air samples from around the world, Rowland found readings of CFC 113 in Wilson Valley to be far and away the highest — over ten times higher than any he'd measured before.

Forward rolls the air samples the "signature of Silver Valley."

The chemical industry is also looking for ways to use solvent-free and catalyst-free processes. These are greenhouse gases that heat up the earth's surface. The industry also is looking for ways to use less energy to make the earth's surface and those who make it. In an industry report, the International Association of Chemical Producers (IACI) said that the chemical industry is looking for ways to use less energy to make the earth's surface and those who make it. In an industry report, the International Association of Chemical Producers (IACI) said that the chemical industry is looking for ways to use less energy to make the earth's surface and those who make it.

The human afflictions linked to ozone-related radiation alone—cancers, cataracts and immune deficiencies among them—may be offset by prior incidence of chemical and stress-related diseases in the electronics industry. These warnings appear

is an U.S. Environmental Protection Agency report that raises disturbing questions. Will enhanced UV radiation during North American food crops and crops marine phytoplankton, altering the food chain from the bottom up? Will radiation damage plants and polymers, weakening industrial pipelines, damaging hazardous chemical tanks or even nuclear?

Allylsulfonide, a consumer medical magazine recently released *A Health*, reports that the chances of contracting this cancer have increased 50-fold and are now 1 in 100 for a Caucasian man.

born. By one estimate, each 1% decrease in atmospheric ozone results in 100,000 new cases of blindness from cataracts. The electronics industry's negligence is not exclusive, but it is significant.

1) Unlike other CFC-using industries, U.S. electronics firms began using CFCs (and HCFCs) in a big way after the discovery of the shredded stratospheric ozone (1974), and after the U.S. banned them at several propellants (1975-78). Inevitably, American Electronics Association (AEA) occupational and environmental directors David Russell and

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6	10,910	10,608	36	37,089	39,650
7	13,197	13,730	37	38,331	40,940
8	15,239	15,690	38	39,371	42,294
9	16,135	17,138	39	40,712	43,585
10	17,397	18,430	40	41,882	44,909
11	18,540	19,734	41	43,067	46,279
12	19,436	21,104	42	44,362	47,548
13	21,012	22,438	43	45,504	48,868
14	22,242	23,757	44	46,747	50,286
15	23,432	25,078	45	47,887	51,571
16	24,674	26,400	46	49,117	52,832
17	26,894	27,731	47	50,359	54,540
18	27,136	29,082	48	51,549	55,678
19	28,287	30,374	49	52,748	56,779
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Congress that CFCs were believed to be "environmentally safe" when the industry began using them.

3) Far from dabbling in CFCs, U.S. electronics firms have become leading consumers (the biggest, after the oil and furniture industries), designing an estimated 300 processing technologies around exclusive use of CFC. During the 1980s, via the Pentagon's "Virgin CFC" military specification, U.S. electronics encouraged microchip, computer, and telecommunications firms from Japan to bend to industry's use of a banned CFC component and to the degree of it in ways that maximize insect damage. In effect, U.S. electronics engineers wrote CFC and methylchloroform

into the manufacturing specs for the global electronics industry.

4) U.S. electronics inflated widespread use of an ozone killer more lethal than CFCs: halons. The spread of computer equipment accelerated the more toxic halon-based fire extinguishing systems. Unlike water, halons put out fires without damaging computer equipment. The EPA assigns halons an ozone-depletion potential up to ten times that of CFCs. The industry and computer firms still specify halons to protect electronics in hotels and jets as well as in critical computer rooms. It is recommended procedure to "burn" halons for extinguishers by expelling their contents into the atmosphere. (The Pentagon admits that only 5

percent of the tone of millions-of-pounds of halons it expels into the atmosphere each year are for extinguishing fires.)

5) Computer keyboard and PC-board circuit elements that spray CFCs are sold over the counter for use by computer workers every day.

6) As considerable expense and effort, the U.S. electronics lobby has defied a crippling blow to legislation that would phase out CFCs. The legislation is a Clean Air Act amendment reflecting the least Montreal Protocol agreement (the May 1989 Helsinki accord). The AEA claims to uphold the Montreal Protocol provision, but the AEA lobbied to strip language that would ban U.S. imports of products made with CFCs. This creates a

back door while complying with a domestic phaseout. U.S. electronics can continue (and increase) its CFC-based production in Asia and Pacific Rim countries exempt from the Montreal Protocol. The industry's letters and spirit of that agreement, which call on the developed countries to develop post-CFC technologies with the developing world. It also demonstrates how the industry turns environmental (and safety) problems to public relations problems without worthy consequences. (The Clean Air Act was before Congress.) In the process, the industry is making a killing out of the social cost of technology production.

At it is, the industry could phase out most solvent CFC and methyl chloroform immediately, since water-and-fluorocarbon (an industry standard process before the move to CFCs) and orange peel-and-solvent-pulp cleaners have existed for years. These clean at least as effectively as CFCs. New approaches are emerging, including ones that eliminate the need for cleaning. How would follow quickly with a concerted effort. With few exceptions, the industry is willing, willing to ill-considered investment in CFC processes behind a showcase endorsement of the Montreal Protocol.

We need, desperately, to stop using CFCs, methylchloroform, and halons. A comprehensive two-year phase out of CFCs and methyl chloroform with technology transfer to developing countries is a good place to start. Elections should recall the overpaid retooling of U.S. industry at the onset of World War II—it will as the two-year CFC phaseout allowance in 1995 (since several firms lost that deadline with no one to spare). The ban also could serve as a corrective to a shallow and dangerous conventional wisdom: our presumed need for ever-faster processing technology. It's time to ask ourselves what we're actually doing: are we, what we're actually doing, and how many new electronic devices justify our mastery of New Climate?

Such a ban would not go far enough, though, because it would not alter the electronics industry's historic course of replacing bad solutions (e.g., carcinogenic TCO with lead, or worse, ones (e.g., CFCs). What our my new tabs and engineers consistently choose to do is get that we know to be dangerous in favor of those we know to be both safe and technologically compatible, it is time to change the way we choose.

We must find ways to incorporate safety and workplace safety into our technology device making. The register, first, unprecedented models that treat global warming and workplace injury as "external costs," and second, an industry in Silicon Valley, we have a profound advantage: the most expensive research and development capability on the world. Will we choose to use our development capability to find workplace technologies for an ailing planet?

Dennis Higgins is the author of *Behind the Silicon Curtain: The Seductions of Work in a County-Fix South-End Press, 1988*. He escaped the electronics industry and CFCs appeared in the December, 1988, issue of *Mother Jones* magazine. This article is Copyright 1990 by IGO Communications, Inc., 375 Dorchester Road, Framingham, MA 01701. Reprinted by permission of Communications.



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BUYER'S GUIDE

VGA Monitors

by Andy Green

Overview

When you go to buy a screen for your computer, you are faced with a bewildering alphabet soup of names and letters—EGA, VGA, resolution, GMA, View Plus, VGA, SUPER VGA... What do they mean? Which should you pick—monochrome, grayscale or color? How much resolution do you need? Should you spend \$115 or \$11,500? What do you get for your money? By the time you have finished reading this article, you will know the answers to most of these questions.

Screens vs. Display Adapters

When you purchase the video part of your computer you need two things: the monitor and the display adapter. The monitor is the box that looks like a TV. It is sometimes called a screen or a CRT (Cathode Ray Tube). The display adapter is a card installed with electronic chips that fits inside your computer. Display adapters are sometimes called video cards or video controller cards. There are many different types of monitors and many different types of cards. You must make sure they match.

Size of Monitor

The basic monitor is 12 inches across diagonally. People with vision problems should consider a 14-inch monitor or larger, but even people with normal eyesight will find them easier to read. When you get a bigger monitor, you will see the most interest of material on the screen, just blown up. If you particularly want to see your computer for desktop publishing, also check out the larger-screen, high-resolution, high-cost blazes too (see "Supermonitors" later in this issue).

If you decide to go with AT clones, consider getting a special, large desktop publishing monitor. A normal monitor will let you see only about a quarter of printed page on your screen at a time. Using a small monitor is like looking down a railroad tube. It is hard to get a sense of the whole, and you must wait and wait while the computer scrolls to show you a different part of the page. Desktop publishing monitors let you see the whole printed page at once. Nearly



everybody who does desktop publishing professionally already buys such monitors. These monitors need special video cards to drive them.

Monochrome vs.

Colour vs. Grayscale

Which kind of monitor should you buy: an inexpensive (\$400-\$700) black-and-white monochrome, an expensive (\$400-\$1500) colour, or an in-between via grayscale (\$1100-\$1415)? Surprised? More expensive is not necessarily better. Monochrome—what colour to pick?

For word processing, accounting or desktop publishing, a black-and-white display is much easier on the eyes than a colour display. The display is sharper and readable.

The computer term for black-and-white is "monochrome." Usually this means the other text on black background. As an option, you can have green or paper white text instead.

The slow green phosphor gives the student display, but sometimes it leaves ghostly trails when the screen changes rapidly. The fast white phosphor monochrome leaves or jitters rapidly—especially under fluorescent lights. White backlights. The intermediate amber phosphor is a compromise.

However, amber has a drawback. It is the colour most susceptible to screen burn. If you leave your computer showing the same picture displayed day after day, the image burns permanently onto your screen so that you will see it even when the power is off.

When you stare at a green screen for a long time, then look away, you will see a pink afterimage; at an amber screen, a blue afterimage; and a white screen, a dark gray afterimage. Some people don't see afterimages at all. The afterimages

from a white screen are least disturbing.

Many people prefer amber, followed by white, followed by green. Desktop publishers seem to like white. Large computers like green. The differences are not that great, so colour choice can be simply personal preference. No scientific study has found one colour is more legible than another.

Colour

For graphics or games, a colour monitor is preferable. For any kind of industrial work, even when the final drawings are black on white, you need colour to help distinguish lines from drawing pipes.

Grayscale

Grayscale monitors allow about 16 shades of gray. Grayscale images are sharper than colour, but not as sharp as simple monochrome. I usually start out with a screen from grayscale because so

little software is truly grayscale-aware. For example, a program may draw bright blue letters on a dark yellow background. In grayscale this comes out as pale gray on pale gray—not exactly the ultimate in legibility. Usually there is a way to configure each program to use more respective colour combinations. However, that is just one more confusing step in the way to contented with.

Resolution

If you look closely at the image on the screen, you will see fine lines of horizontal lines. Each line is made up of tiny dots called pixels. If the specification states that the monitor has a resolution of 640x480, it means there are 640 pixels in each line and 480 lines. The more dots per line and the more lines per screen, the finer and clearer the image will be.

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Dot Pitch

If you look at the surface of a colour screen with a magnifying glass, you will see very tiny dots of red, green and blue phosphors. These dots are much smaller than the pixels. It takes at least three phosphor dots to make up each pixel. If the specification says that the dot pitch is .28 mm, this means the distance between the centers of the blue dots is .28 millimeters. A very high quality screen would have a .25 dot pitch; a midrange would have a .31 dot pitch; no economy unit might have a dot pitch as coarse as .41. Cheap, assembly monitors can be as coarse as .51. The smaller the number, the finer and clearer the image will be. If you measure the surface of a monochrome or grayscale screen with a magnifying glass, you will see no dots at all. The screen is perfectly smooth. That is the reason these monitors can produce sharper images than colour monitors.

Types of Monitors

The most common types of monitor are NTSC, RGB, TTL, VGA, fixed frequency, and VGA multi-frequency. NTSC stands for National Television

Standard Committee but is more commonly known as *Never The Same Colour*. These monitors have low-quality TV-like images suitable only for games.

RGB (Red, Green, Blue) monitors can display only 16 different colours and again are used mainly for games.

TTL monitors are inexpensive, but produce very dingy (dim) and, usually with amber letters on a black background. Happily, all TTL monitors are good. Expect to pay between \$119 and \$170. A flat screen reduces glare, but costs a little more.

Fixed frequency and multi-frequency VGA (Video Graphics Array) monitors come in two types: colour and grayscale. The colour monitor can display an almost infinite number of colours. The grayscale monitor displays shades of gray. The variable frequency VGA monitors are the most expensive and produce the sharpest graphic images.

Types of Display Adapter Cards

There are several types of display adapter cards for AT buses. 1. VGA colour graphics adapter (\$60).

Roedy's Amazing Facts

● Periodically, the cheapest equipment produces the cheapest possible scan. A Hercules-style monochrome graphics card and costing \$20 and a monochrome TTL monitor costing \$99 will provide cheaper scan images than a \$100 SUPER VGA card and a \$100 monochrome colour monitor.

● If you double the resolution (lines/cm) of the image, you quadruple the total number of dots on the screen. This means there are four times as many dots to compare. This means the image points four times more closely. People who buy expensive, high resolution equipment often end up using it for low resolution, which just goes to prove the old adage.

● There is no standard for SUPER VGA. Unless the manufacturer of your VGA card provides drivers for your software (e.g. Windows, Amosoft, Windows, WordPerfect), those packages will not be able to take advantage of the SUPER VGA features. You might as well have bought plain vanilla VGA.

● If you line up five monochrome monitors, colour and grayscale monitors in a line then ask a group of people to pick out the best monitor by judging the contrast, resolution and clarity of the image, they will usually all pick different monitors. Before you buy, stick to your monitor for a long time to be sure it is only on your eye. You will be doing a lot of staring once you get it home.

● All monitors emit radiation in such small amounts of radiation, but so do toasters and microwave ovens. Monochrome monitors emit much less radiation than colour.

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The new original graphics card, but today only used on one old-style system.

2. Hercules card for monochrome text and graphics (375). This is the card most commonly used for word processing.

3. Hercules Plus card (395). The card can print fancy faces (e.g., italic bold) very quickly. Used mainly with Microsoft Word 5 word processor.

4. VGA (325) for high resolution, colour or grayscale, text and graphics.

5. SUPER VGA (350 to \$400) for ultra-high resolution, colour or grayscale, text and graphics.

6. Spit Personality cards (\$190 to \$300) pretend to be one kind of card one minute and a different kind the next.

7. Specialty cards (\$100 to \$250 including monitor) such as the Wet and Grain that use special way-fake monitors for full-page mapping for desktop publishing with ultra-high resolution.

There are a few other cards which you can hear about but which are now obsolete. The MEA (Monochrome Data Adapter), that could display text but no graphics, was the original adapter card for the IBM PC. The Hercules brother CardMate was an alternative to the VGA card that never caught on. The VGA (Extended Graphics Adapter) was IBM's first attempt at the VGA card.

CGA Colour Graphics Adapter Card

I mention this card mainly to warn you away from it. It provides 320x200 pixel colour graphics and 640x200 monochrome graphics suitable only for games, not word processing.

The images are blurry. There is no text underlining. Unless you are willing to live with none, the screen painting is very slow. The screen has an annoying black when it scrolls.

You will sometimes find it as the cheapest clones coupled with a black-and-white NTSC monitor. This card will only work with NTSC or RGB monitors.

Hercules Graphics Card

This card is the most common video card sold. The Hercules graphics card prints plain text very rapidly. It can also print 72x36 pixel monochrome graphics. Letters 1-3-5 dot beautiful on-screen graphics and Microsoft Word 5 uses the graphics to show bold, underlining, superscripts etc. on the screen. The problem with graphics made in these characters are pointed out by dot = a pointlessly slow process.

There are many inexpensive Taiwanese copies of the Hercules card. However, if you use them with Microsoft Word 5, a large percentage of these do not work properly. One brand I have found that does work reliably is the PS Diamond Power. Hercules themselves no longer manufacture the Hercules card. They have replaced it with the cheaper and better Hercules Plus card.

The Hercules graphics card will only work with TTL monochrome monitors.

Hercules Plus Card

Only a few programs, such as Microsoft Word 5, can make full use of the special features of this card. Most programs treat it as a plain Hercules graphics card. It supports monochrome text and graphics. It also allows you to test from a library of fonts in a design your own, so, if you want, you can display your

DOS programs in Old English. It allows static and fluid fonts to display on the screen without using the pointlessly slow desktop-paint method.

It is the ideal card for use with Microsoft Word. Unfortunately, no inexpensive Taiwanese copies exist. This is the card I use myself.

This card will only work with TTL monochrome monitors.

VGA

The VGA offers high-resolution grayscale and colour graphics. If you go onto a store, ask for "VGA" not "Video Graphics Array". Almost no one knows the long name. Most new software comes out as written for the VGA card.

IBM made the first VGA card, and others such as the Hercules company made precise clones of it. There are some Taiwanese clones as low as \$125 beginning to appear. The better quality Taiwanese clones use the Timing chip set. I have not yet had experience with these inexpensive clones, so I will not recommend them and neither will I warn you against them.

The VGA card is very versatile. It can run in twelve different modes. For example, in one mode, the card can display 32 lines of 80 characters using 16 different colours. In another mode the card can display 640x480 pixels in 16 colours. In another it can display 320x200 in 256 colours.

The card has palette registers. This means the card can smoothly transfer from one colour to another. It has special hardware for smoothly scrolling text so that the text floats across the screen rather than jerking in lines. Like the Hercules Plus card, it supports variable

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letter

If you buy a premium brand SUPER VGA card, you will get a better guarantee. For example, the Video Seven line comes with a *lifetime* guarantee. Not only the guarantee, the hardware will function, the guarantee the card will be compatible with the IBM VGA card.

The premium SUPER VGA cards put the screen better (the mode for the premium). The VGA card expensive, not to more accurate to your CPU can pass the RAM in the VGA card faster. Only very expensive video cards, beyond the scope of this article, do any drawing themselves. You can also speed to city centers. If you want the fastest possible card — the Video Seven VR40 — you would pay \$600. However, if you are content with a card just a tiny bit slower, the Video Seven 125s, you would pay only \$125.

Compatibility

Last summer one of my customers and I independently found eight different brand-name SUPER VGA cards for compatibility with a number of software packages including Microsoft Word, WordPerfect and Lotus 1-2-3. Packaged programs. We found more problems with nearly every card, mostly to graphics handling.

Please, do Internet, and buy your software first and then test it on the Super VGA card before you buy!

The two cards we liked best were the ATI and the Video Seven. Kent Quirk, the former editor of PC Tech magazine and the author of a note of VGA testing programs, told us his favorite card was the Video Seven as well. That checked out. The customer standardized on Video Seven for his company.

Should you do likewise? First, consider that they are also the most expensive SUPER VGA cards. The only thing that comes is how well the card works with your software, not on some magazine's benchmark, or mine for that matter.

VESA

I had a little when I read SUPER VGA has no standards. VESA, the Video Electronics Standards Association, has defined SUPER VGA standard for 1024x600 with 384 columns and 800x600 with 16 columns. However, for the myriad other modes, you're on your own. There are no ultra-high-resolution modes such as 1600x768. You cannot even count on a VESA-compliant board having all the VESA modes, since all the modes are optional.

Monitors for Super VGA

What kind of monitor do you need for SUPER VGA? It depends on what type of SUPER VGA card you have.

In theory, if you use an ordinary low-frequency VGA monitor, it will work. However you must be very careful never to invoke any of the SUPER VGA modes or you could damage the monitor. In practice, then, it would be both wasteful and potentially dangerous to use this combination.

For SUPER VGA you need a multi-frequency monitor. This means a monitor smart enough to handle all the different SUPER VGA modes. Each mode requires the electron gun to move each line at a different speed or frequency — hence the term multi-frequency. When the video card switches modes, the monitor has to quickly get in sync with the new frequency — hence the acronym "hotswap." You will see various spec-

ifications. Princeton calls it "Autosync," NEC calls it "HotSwap," Sony and Samsung call it "Multiscan."

Whenever you switch modes, the picture will grow or shrink a little horizontally or vertically. You can handle the controls to adjust it back to the right size. If you have a nonprogrammable video monitor such as the NEC 80, there is a tiny computer inside the monitor to adjust the controls for you.

If you bought a \$419 Princeton Max II graphics monitor, for example, it could handle any SUPER VGA modes up to 1024x770. You must not use any higher resolution mode. If you bought a \$725 NEC 2A color monitor, you could handle any SUPER VGA modes up to 800x600. The number of colors is irrelevant. If you bought the \$530 NEC 3D color monitor, you could handle modes all the way up to 1024x770.

Those dollar figures may have you reaching to your breath a little. There are lower-cost monitors, for example the \$245 Samsung Inter 165N and even more color monitor rated at \$99x840. The colors are still rich, but the images are not quite so sharp, especially near the edges of the screen. If you look at a white letter "A" on a screen you will see a glowing of these images, in red, green and blue, slightly misaligned. The convergence of the three images is usually perfect near the center, but slowly near the corners. The letters are still quite legible, but if you stare at such a screen for several hours, your eyes may start to ache.

If your card can create modes higher than your monitor can handle, you must be careful never to use them. Unbelievable as it sounds, I have only seen one

card, the ATI Wondercard with a safety mechanism to prevent you from accidentally invoking one of the forbidden modes. If you made a practice of quickly moving your monitor off whenever you invoked some mode that did not work properly, it might be your monitor would suffer permanent damage.

Interface

There are two ways of handling the ultra-high-resolution modes such as 1024x768. The image is treated in two steps — one to do the even lines then back again to do the odd lines. This is called *interlacing*. The advantage of this method is the card and monitor do not have to work in lock and flow can be made with cheaper components. The disadvantage is flicker and burning near horizontal lines. When the image is made in one sweep, this is called a *non-interlaced display*. If you buy an ultra-high-resolution card, make sure you get a monitor with matching interface specifications.

Split Personality Cards

If you were a programmer and your job were to write software to work on all these different video cards, including the obsolete ones and the rare ones I did not even mention, imagine how confused your desk would be with equipment to test the programs.

You might long for a single card with a split personality that one minute could pretend to be an MDX card and the next a VGA card and the next a Hercules graphics card. Such a card is the ATI Compact Solution or the Green Spectra.

However, notice these cards are for programmers, in the hands of first-time users they are a headache. With all that

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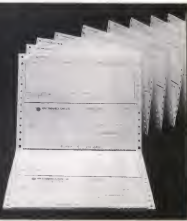
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scope, sensors put lying themselves. I remember one such card, that will maintain seamless to protect the guilty. I would tell it firmly ahead of time. These protocols be all for the card, "but it could not help begging to the program about the other sensors that it was also a CIA card, etc. This behavior confused the Hayes Modem program, causing it to cause the almost-forgotten VGA graphics mode.

Still, personally cards can sometimes attach to several different kind of monitors. You must set switches on the card to tell it which kind of monitor you have. If you set the switches incorrectly, you can damage your monitor. This is one more reason I do not recommend these cards for first-timers.

Games

When you buy a computer game it will usually tell you on the box whether it runs on each of CGA, Hercules, or VGA and whether it requires a colour monitor. If you are a confirmed games addict, check out which kind of video card your favourite games require.

I do not like playing a computer game myself, but I think it may have a very important purpose if you have children. Let me tell you a story.

A few years ago, I was chief instructor at a computer summer camp for boys and girls ages 7 to 15. I interviewed each child and asked what he or she most wanted to learn. Ninety-five percent of the kids said, "To make my own computer game." So I designed a friendly curriculum to teach them just that.

One little boy seemed to have warm water under a boot so part of his game, I had to teach him a little impatience. Another wanted a monster ball to fly automatically through the trees. I had to teach him a little colour.

I was in the lunchroom talking with a professional science teacher. A group of kids came up to me and pleaded: "Really, please, please teach us to program. You said 'Really' how to do it. Please!" As you could imagine, the science teacher's mouth dropped open. Here were little kids BEGGING to learn math.

The older kids were somewhat more subtle, but they dragged out of me the minute details of the inner workings of the computer as they could do sophisticated, high-level character-cell animation.

These kids learned more about computers in five days than most university students learn in a whole year. Games with colour graphics and animation are what motivate them.

Judging Quality

To prefer the quality of a monitor and video card combination, just look at the screen running the software you plan to use. Trust your own two eyes to tell you which images are acceptable. Use your own judgement on how much speed is necessary. Take your time. A good monitor should be easy to look at for long periods. Other experts who produced this article agreed with everything I said except which monitor produced the best images. You have to look for yourself.

Also, listen for a high-pitched whine. Some people cannot hear the noise, but it drives others mad. Make sure the monitor you choose is sufficiently quiet.

What To Avoid

For word processing and data entry,

avoid colour, especially CGA if you buy a high-quality colour monitor; you may find the image acceptably sharp, but it can never be as sharp as even the cheapest monochrome system.

Avoid any other sort of "enhanced" video card I did not mention here. It may well be enhanced, but it will probably not up-configure some of the programs you buy.

Avoid buying any of the obsolete cards such as the MDA and EGA. Avoid using the CGA card except for games.

What To Choose

For almost word processing and accounting machines, go for a Hercules graphics card and a plain 14" flat screen TTL monitor. If you plan to upgrade later to full-colour graphics, you could get a SUPER VGA card with grayscale monitor. Grayscale will give nice images almost at last.

If you plan to use your computer primarily to run Microsoft Word 5, get a Hercules Plus card and a plain 14" flat screen TTL monitor.

If you want to play games, try one of these three monitors:

1. Get a superior games computer.
2. Get the same one as Hercules graphics is close with a plain 14" flat screen TTL monitor and one Hercules CGA card with the cheapest real RGB colour monitor you can find.
3. Get plain VGA and a full-frequency colour monitor. Choose a low-cost monitor if all you want to do is play games. Choose an expensive one if you want to do a word processing as well.

If you want a universal-purpose display that will let you dabble with just about anything that will give you freedom to try new programs, get a plain VGA card and good-quality full-frequency colour monitor.

If you are buying an 80880 machine and you want the ability to use programs such as Vermeer, Windows, Presentation Manager, GEM, Amosaic, or other GEM programs like high resolution, consider SUPER VGA. Make sure your video card comes with a driver for the software you will be using or there is no point in buying SUPER VGA.

If you want to do desktop publishing seriously, run shops that specialize in desktop publishing and learn about the various special-purpose desktop publishing, large, large-page layouts.

Acknowledgements

At used, my friends on the BIX electronic conference — Harvey Fishman, Julia Downing, Jeff Kalchik, Mike Sargenta, Gene Berkman and Tom Mousa and others — all helped me write this article.

Parting Advice

If you remember anything from this article, let it be this. Buy your software last. Then test it on the monitor and buying adapter before you buy. Trust your own eyes, and the specifications.

Buddy Green is President of Canadian Mind Products, a company that sells computer software.



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FLASHCOM motherboards are currently available in several computer systems including the new IPC-386. To get more information and the name of your closest dealer call the 3D Micro-computer stocking location nearest you. And, don't forget to ask about the nationwide hardware and software support that's available.

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PC WORD PROCESSING

Upgrading to WordPerfect 5.1 — Is It Worth the Effort?

by Nigel Finlay

If you're a WordPerfect user who made the upgrade from version 4.2 to 5.0, you might be understandably hesitant to make the jump to 5.1. The 4.2-to-5.0 transition was a rather rough one. So many things changed at once that some users found themselves pretty much at sea. Old features were found on new function keys, many old features weren't, and whole concepts had to be

relearned. And the little changes were often the most annoying (like having to hit Alt-F5 again — rather than just clicking away key — to get out of the View Codes screen).

The 5.0-to-5.1 transition is much smoother. While 5.1 adds some interesting — and powerful — new features, the functions you're already used to from 5.0 haven't changed much. In fact, probably the only thing you'll notice is

that they work more smoothly and more logically... the way they should have worked from the outset. It's only when you start exploring the new bells and whistles that you'll really notice the difference.

So, what does WordPerfect 5.1 deliver?

Mouse Support

A common complaint about WordPerfect was that you couldn't run it with a mouse. If you wanted robust support, you had to write your own driver, or buy a third-party mouse driver like MousePerfect. Both options had problems. Most

wrote out "no" or "don't have the time to" — back up a mouse driver, while who really wants another TSR program taking around 100K in memory, anyway? The boys at WordPerfect must have heard the same complaint — or guessed Microsoft's growing sales — because WP 5.1 now offers mouse support and a finer system of pull-down menus. The drawback, they've left all the normal function key commands in place for those of us who want to use a mouse only for moving the cursor and blocking text.)

The mouse works in a nice intuitive manner. Reposition the cursor anywhere on-screen by moving the mouse and "clicking" the mouse with the left mouse button. Click text by holding down the left button and "dragging" the block over the text to be highlighted. Releases the left button by hitting the center button, and call up a menu of pull-down commands the right. It's now possible to perform almost all of WordPerfect's operations without remembering a function key code.

Tables

Tables offer a powerful way of formatting text or numbers into rows and columns of information... utilizing the less-than-stellar Parallel Columns and Merge functions. You can dynamically size the cells in your table (analogous to cells in a spreadsheet), change the lines delineating the table, screen (shade) the background, etc., etc., etc. You can also use free-function mark, writing formulas that identify cells by their cell location (e.g., A6, shade of Lotus) rather than by set column position as in standard WP math. It becomes possible to turn a table into a spreadsheet.)

WordPerfect also lets you import information from spreadsheets like Lotus, Excel and WordPerfect's own PlanPerfect. When you import the data, WP 5.1 automatically builds an appropriate table to contain it. Also, WP 5.1 supports "merge links" as figures change in the base spreadsheet, they also change in the "linked" WP table (a real boon to anyone involved in forms generation).

Once you've created the table, editing the text and figures within it is easy. All the regular editing features work, and when you delete text you don't run the risk of leaving the rest of the table collapsed into a seemingly random series of Hard Page breaks, as in Parallel Columns.

Equation Editor

WordPerfect Corp. seems to have realized that some people need a word processor program more than word mathematicians, scientists and engineers, for example. Sure, the other versions of WP let you use the limited Greek and mathematical character set that's a part of ASCII, but that certainly wasn't good enough for the growing pool of users. WP 5.1 addresses this gap with a full-blown equation editor, including a comprehensive collection of symbols, characters and mathematical operators and functions. In a preview window, you can see exactly how your equation is going to look on the printed page. When it clicks into the hard copy, if your printer doesn't fully support it, symbols in your equations, WP 5.1 inserts a rough approximation of the symbol in graphics. Unfortunately, the equation editor isn't particu-

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fully user-friendly. The system's functions, and the editor is very easy. Expect to see lots of windows, "insistent format" error messages when you first try to use it. (On the positive side, when you make a mistake, the editor displays the cursor near where it thinks you blew it. In long equations with lots of nested functions, this can be a real godsend.)

Merge Language

The merge function in earlier versions was useful, but rather limited (which was

okay, since most people just used it to mail-merge mass mailings). In 5.1, however, merge has become a real powerhouse programming language similar to WP's macro language. It lets you create files (so that what used to be "F1" can now be F1000), test macros to make sure they always return the variables, call subroutines, and generally do anything you might want to do with macros. (For example, you could write a macro script that would

CONTINUES ON PAGE 41

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Shareware Clip Art

Although no-one has written a desktop publishing program compatible to any of the available commercial programs, shareware has entered DTP by supplying a wealth of graphics for use to use in their desktop publishers. One can find clip art for the large DTP programs such as Ventura and PageMaker, as well as PPS First Publisher, PrintMaster, PrintShop, and even WordPerfect.

The Public (software) Library (Texas, USA) has recently released 14 disk sets of scanned images in four available formats: EPS, PCX, WPS, and CDR. The EPS (Encapsulated Postscript) are the highest quality pictures and require a Postscript printer and may be imported into major DTP programs such as Ventura. The PCX files are full 300 DPI resolution. In bit-mapped graphics, small

images tend to lose resolution when enlarged. PCL has scanned the images in fairly large to avoid this problem. Little or no loss in resolution occurs with down-sampling. PCX files can be imported into virtually all desktop publishing programs. The WPS format is ready to import into WordPerfect versions 5.0 and later. The CDR files are required for Corel Draw users, as Corel Draw will not import EPS



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Maps, Flags and the Fish Four are just some of the graphics available from Shareware clip art

Men. Images scanned include Animals, Plants, Scenery, Cars, Signs, Computers, Food, Holidays, Festivals, Music, Sports, Holidays, Icons, Flags, Maps, People, and more.

Phil Swerdlow (California) has scanned many cartoon and character images at 300 DPI for many DTP and graphics programs. The images are smaller in size, so don't use these for large print, and never images are provided per disk as a result. Some of the items provided by Phil Swerdlow are: Shopping, Travel, Astrology, Business, Office, School, Fantasy, and much, much, more.

Bob Gault has created a two disk set of his own original drawings and released it to shareware distribution as BG-AET-2. The drawings consist of religious and holiday pictures in 360 format, which may be imported to Publish-It, WordPerfect 5.0, Ventura, and other DTPs. The drawings were created as another shareware program called PG-Shift and converted to IMG format.

Valerie Jean Sawyer has created a unique collection of artwork for PrintMaster and PrintShop users and released Gweta V4.4. She has included on the disk screen-shots which for several pictures so that you can get a hard copy of your image files for future reference.

Shareware provides a cost-effective method of acquiring artwork for many different programs. There are just some of the many clip art disks available from shareware. Contact your shareware distributor and inquire as to the availability of clip art for your favorite DTP or graphics programs.

Gord Simmonds is the owner of Sili-CCM Services (894-0890), a company in Abbotsford specializing in shareware products, and an associate (vendor) member of the Association of Shareware Professionals.

DESKTOP PUBLISHING

Hot Stuff for DTP

A Macintosh Graphics Conversion Utility That Works on a DA and a Photo CD-ROM That Is Royalty-Free

By Eileen Singh Khanna

Two useful new products come across our desk this month, one for the Macintosh and one that works on either Mac or PC. The first is a graphics utility that allows conversion from many IBM, Amiga and Macintosh formats into the Macintosh's standard PICT format. The second is a new CD-ROM disk of photographs, both color and black-and-white, that is royalty-free.

Product: PICTURE This

Publisher: FOM Inc.

531 Eden Street, Suite 100,

Hendron, VA 22070 (703) 478-0601

System Requirements: Macintosh 1 megabyte or higher, System 6.03

Price: US\$49.95



Because it operates as a desk accessory, PICTure This offers easy conversion of IBM, Amiga and Amiga graphics to the Mac's native PICT format.

Product disclaimer: CD-ROMs of black and white and color TIFF images. Publisher: Discmagazine, 16 East 10th Street, New York, NY, 10003, 212-675-8500.

System Requirements: Macintosh or PC with CD-ROM and software which can display or edit TIFF files. Pricing: US\$149. The collection is also available on diskette, slides or 4752 pixels.

discmagazine

The Good News

Finally, a company has released a collection of photographic images on CD-ROM which is sold with unlimited scanning, manipulation and reproduction rights. Discmagazine, Inc., of New York is marketing The Professional Photography Collection as an inexpensive source of high-quality stock photographs. This collection differs from offerings such as NIK's Image Bank, which is more like a stock photo catalogue on CD-ROM. You can use the images for "in-house" publications, but if you want to use the photos commercially, you must pay a fee beyond the price of the CD-ROM.

The Bad News

The images are for the most part good and useful. They lack some of the polish that the NIK collection has, but you get what you pay for.

The real draw here is in quantity. The discmagazine CD-ROM contains only 100 images, some being Image Bank's over 6000 images. discmagazine does have three different file formats: some of each image: black and white TIFF, 8-bit color TIFF and 24-bit color TIFF. Image Bank, in contrast, has only TIFF and Truevision TIF files.

Utility

The black-and-white TIFF images reproduce well when output on a laser printer, and it is possible to manipulate the images in programs such as Image Sketch, Digital Drawings, or Adobe's new Photoshop. They can be imported directly into most desktop publishing programs which support TIFF images. The 8- and 24-bit color images are also suitable by a variety of painting programs, but few DTP programs currently have the ability to separate 4-color images.

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PICTure This

The IBM world has long had a collection of graphics utilities, such as dPicture and dPicture, which allow the conversion of images between a diversity of formats. The Mac world has suffered in isolation, due in part to a better integration of Macintosh graphics. Many programs already support a variety of formats and conversion was not as much in vogue. As more and more options began to use a variety of IBM, Macintosh and Amiga computers, there is a need for a program that converts images between platforms.

PICTure This is a graphics utility that allows users to convert from a wide variety of image types to the Mac's native PICT format. Formats supported are: Targa-16, CGM, Dr. Halo CLUT, GEM IMG, Lotus PICT, Lotus BIT, Lotus RLE, PCD, SeaBaster, Amiga BIT, Amiga RIFF, TIF, EPSF, K11 Bitmaps, MacPaint, CompuServe GIF and RLE.

We tested the program with a number of different file formats and it worked well. Best of all, it comes as a desk accessory, so that it is often easy to reach when you need to convert a file. It has a simple and well thought out interface. It shows you a preview of the image in advance of saving it, and also allows you the option of going directly to the Clipboard so that you can paste right into your document.

My only problem with the program occurred when testing it with an old TIFF file created on an Amiga machine at a friend's. Although TIFF is supported in the standard, it is not yet being implemented in different ways by different vendors. The program worked well with newer scans from a Microtek scanner. Fortunately, most programs that create TIFF files allow the option of saving in PICT or not, so that would not generally be a problem.

PICT is a kind of lowest common denominator in Macintosh graphics, as it allows some conversion from, say, a TIFF or EPS file. However, it can be useful in converting logic made as EPS to a format which can be pasted into programs which do not support EPS. The program is also very useful for converting graphics from the 845-DOS and Amiga worlds.

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DESKTOP PUBLISHING

Imagesetter Options

"Going to Line" isn't what it used to be.

Imagesetter produces high-end graphics at much higher resolution than even color dot EDP data for much less price and thanks to the advent of PostScript, they are readily accessible to plain vanilla PCs. — *Image from Graphic Canada Inc.*

By Giles Singh Khosla

What Is An Imagesetter?

The Lasertronc imagesetter (or "Line"), which became available about a year after the Macintosh/Laserwriter combination had been introduced, served to bring desktop publishing into the realm of serious communication for professional typographers and graphic artists.

These high-resolution PostScript imagesetters from Linotype — the Lasertronc 100 and Lasertronc 300 — gave meaning to PostScript's notion of independent design. Lasertronc equipped a virtual monopoly in this field for two years before they got serious competition.

Now, new PostScript imagesetters are being announced regularly by Compugraphic, Varigraphics, and a host of PostScript-compatible vendors such as Berry Graphics. Fortunately, Linotype — formerly the last player in the field of high-resolution PostScript output — has now grown competitive. The company keeps coming out swinging, with newer and faster processors and better equipment.

The ending of their monopoly means that there are lots of PostScript imagesetters available, with a considerable range of speeds and prices. The original Lasertronc 300s were priced around \$10,000, and imagesetters are now available starting in the low \$30,000s — making on-line setting possible for many companies.

The imagesetters covered here all use a photographic process (paper or film) for output.

Berry Graphics

The systems offered by Berry Graphics, because they use a RIP (raster image processor) which is built out of an IBM PC computer, are modular, flexible and priced competitively. Their controller boards are from Rip and they have AppleLink, serial, parallel and Ethernet ports. According to Berry, speeds can improve substantially with Ethernet networks.

The local representative for Berry Graphics is a company called Interact

Publishing, which operates in conjunction with Northshore Publishing out of Seattle. According to Interact, the local sales manager for Interact Publishing, servicing runs under 24 hours if a customer goes down within the province. At this point, the service is in the sales area, but shortly will be sold directly to a third party network. Because Berry is a relative newcomer to the market, there are only three Berry Graphics units installed in B.C. to date.

Contact: Interact Publishing, Ross River, 11601 Louisa St., Fort Coquitlam, V3B 5V7, 290-1163

Compugraphic

The CG 4000TS imagesetter, a 2,400 dots per inch (dpi) unit that competes with the Lasertronc 300, uses a genuine Adobe Postscript of Adobe's Laserfont Processor, giving it full PostScript compatibility. These units use turbo boards to speed things up through a process called page buffering. This allows the unit to be printing one page while processing the next. These machines are available with 40- or 80-megabyte hard disks that contain either 35 or 75 PostScript typefaces, and can produce halftones with up to 170 lines per inch and over 256 gray levels.

According to AGFA Compugraphic, reconditioned equipment is available, which can bring prices down significantly. New devices are expected in April that include faster RISC processors processing speed increases in the area of 250%.

AGFA Compugraphic has five service engineers in B.C. Service agreements are based on service within 8 hours.

AGFA Compugraphic Canada Inc., 4140 Yule, PO Box 11, Millbrook Way, Richmond, BC V6V 2W6, 270-3434, fax 270-4157

Linotype Canada

Linotype is the grand old man of the PostScript imagesetter business, with three main products. All three, the L260, L300 and L500 are Adobe-based machines. The L500 is a wide-bodied unit that can handle film or paper up to 18 inches across which is important for

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added pricing. The L500 and L300 handle Gyps and Z-plat material which allows publishers to create photos which are ready to print from directly. The L300, their master model, offers up to 1600 dpi resolution. The L500 is the main unit that they sell, with the best speed, resolution and sufficient accuracy for some types of color separation. Linotype also offers an Ethernet port on its servers which are high-speed processing of images.

Because of their pricing start in the industry, Linotype has the lion's share of the market with over 80 installations in B.C., according to Linotype Canada district manager Jim Morrey.

Those interested in purchasing a Linotype imager can have a closer-up look at the Linotype line-up on March 24-25th at C/D/D's Planet, 1800 Robson Street in Vancouver, 10 am to 8 pm.

Word processors bring the price of entry into PostScript printing to less than \$15,000. There are rumors of a large number of new products — many of them aimed at the high-end colour market — imminent from Linotype.

Linotype Canada has no service technicians in B.C. and offers service within one day.

Contact: Linotype Canada, Jim Morrey 222-0346.

Varietyper

Varietyper brought out two PostScript imagers in early '89. The 4500P can print 2,400 dpi while the 4200P outputs up to 1,500 dpi. These two units use genuine Adobe RIPs. Recently Varietyper has rebranded their line to be compatible. Now they have what they call their 4000 series in which everything is an option. This gives the customer down pricing is a bit tricky, but it allows them to configure systems to user's needs more effectively. RAM size, RAM speed, hard disk size, and output device can all be custom selected for the particular working environment. Multiple clients can



be hooked up to one RIP box so that a customer can RIP an image once, print it on plain paper later for proofing, if they are satisfied, the file can then be printed to a higher resolution device for final output. According to Varietyper, this lowers the cost of upgrading in a dynamic market, and allows for adaptation of new technologies faster.

Varietyper machines also use the page buffering approach for their imagers.

They also offer a line of non-Adobe devices called the 5000 with a PostScript clone. These systems are in use by large newspapers. Varietyper, through its parent company, Tegen, offers a high-resolution, photo-type laser printer called the VT-600, which can print up to a photo-sized sheet of paper at 600 dpi. Tegen printers have been recognized with a print up to 1200 dpi on photo paper.

Service for Varietyper is handled by two service technicians who work out of their Burnaby office. According to their sales representative Don Wall, these service technicians attempt to provide service within 4 hours.

Contact: AM International, Don Wall, 470-7007, Fax 420-1006.

How An Imagesetter Works

How do imagesetters work? What follows is a simplified view of what goes on inside a sophisticated photosetter to help you learn some of its inner workings.

The first step in imagesetting is generating a PostScript file. This is the format (Adobe PostScript) that contains information about each page element, such as headlines, graphics and text as well as the size, shape and positions of each, within a long set of commands. Anyone who has ever opened a PostScript file with a word processing program will recognize the commands that the file gives to the printer. In this file goes the imager through the colour, it enters the raster image processor or RIP box. Through one of three paths: EPS, CIE, or a third path, it goes to the printer.

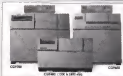
The RIP is usually equipped with a microprocessor or microcontroller as well as within the standard set of desktop computers. Linotype uses Motorola 68010 and 68010 32-bit microprocessors. Compugraphic is just releasing a new RIP that uses RISC or Reduced Instruction Set Chips, which are reputed to offer substantial speed increases in processing. The function of the RIP is to convert PostScript commands into a mapped image of the page. Another function of the RIP box is to store printer data either on a hard disk, or temporarily, in RAM.

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AGFA

Imagingsetters Available

Model	Price	Resolution (dots per inch)	RIP	Width (inches)
IMSET GRAPHICS				
ImagingSet 300	\$41,000	400-3000	Page	12
ImagingSet 400	\$48,000	400-3000	Page	15.7
ImagingSet 300 High Speed	\$43,000	400-3000	Page	12
ImagingSet 400 High Speed	\$60,000	400-3000	Page	15.7
300TDP	\$73,000	3000-3000	Page	12
400TDP	\$126,000	3000	Page	15
COMPTON GRAPHIC				
CG 4000-PS12	\$65,000	1200-2400	Art line	13.5
CG 4000-PS10	\$73,000	1200-2400	Artline	13.5
CG 4000-PS10	\$68,000	1200-2400	Artline	11
UNISYS				
Unisette 200 50 RIP 4	\$28,448,000	875-1103	Artline	12
Unisette 200	\$50,475,000	875-2543	Artline	12
Unisette 600	\$174,000,000	1200-2543	Artline	15
VAULTTECH				
40000 Series Low-end	\$20,000+	1200-1800	Artline	11.7
4000 Series Mid-range	\$30,000+	1200-1800	Artline	11.7
4000 Series High-end	\$72,000+	1200-1800	Artline	11.7
5000 Series	\$75-180,000	1000-3000	CM	12.04"

From the RIP, the file travels through a cable to the main machine, the actual imager.

A cassette holds an unexposed roll of photo paper or film inside it. The file gets transferred between pairs of rollers to the last with the help of servomotors mounted on rollers, against transfer speed. Once it is exposed, the film or paper rolls into the taking cassette.

In the end, everything has taken place inside the machine, which is lightning. The film or photo paper in the taking cassette is transferred to a processor, which is enclosed in a four chemical bath. It is picked up by rollers and carried through the developer solution

which stops, fixes and stabilizes the film or paper. The developed roll is ejected at the other end into the waiting hands of the imposition customer.

What You Should Consider In Buying An Imager/Setter: PostScript Compatibility

One of the driving forces of the whole desktop-publishing movement has been PostScript. PostScript is a page-description language that tells the imager/setting and laser printers how to create an image. The success of desktop publishing as a whole has been the wide spread acceptance of PostScript as a standard.

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Roland DataTrain DPC-3016

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Roland Raven 2417 Printer

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We handle models for Mac and IBM are available for printing your own documents, with the software of your choice and the latest Adobe type library in your fingertips.

Can I Modern It?

Does the bureau script file by accident? This can save a lot of time calling for counters, driving to make sure traffic, or hunting for parking in the crowded downtown area.

What Else You Got?

Can the bureau accommodate special printing needs? Color printers and 1 color machines are just some of the variations of services being offered by local service bureaus. Free parking is also more to know about.

Tips

Some tips for using an imaging/printing machine to prepare a document are: check for operating system and software compatibility; match your fonts for cost savings; give up jobs to take advantage

of a page's full image area (e.g., print there different business cards on one page); anticipate differences in hardware, software, and space; choose a graphics artist who will save printing time; and, if you have to meet a deadline, especially if you are new to using imageprinters, allow extra time for a project.

Laser Print It First

Another tip is to try bringing in a laser-printed proof of the document so that they can tell if the job has printed correctly on a laser.

Service Bureaus

What follows is a survey of the service bureaus that we contacted in Vancouver and the surrounding area. We asked them what computer they supported, what kind of output and output device they had, how much they charged, and if they offered rental of computer work-

stations, and finally if they had any specialties that we should know about. Here is what they said.

ADP Computer Ltd., 6462 Clough St., West Vancouver, B.C. V5W 2E7. Phone: 645-6191 (pager). Fax: 621-6462. 3004, 1 Laser HP LaserJet II 0254. For Machine service at \$2.50 per page (including postage plus long distance charges).

Albion Graphics Inc., 205A, 3625 N. 4th Ave., Vancouver, B.C., V5G 2V6. Fax: 736-7410. BBS: 734-9440/1306-9409. BBS, also, all dedicated Word Processing machines: 2 Windows, Calera, Kerned, 2 QCR, Calera, Kerned, Albion Disc Conversion. Albion provides disc and tape conversions from most systems. Dedicated Word Processing conversions are a specialty.

Arlene Desktop, 239 West Hastings St., Vancouver, B.C. V6B 1B6. Phone: 679-5242. Fax: 688-7844. Mac, 3 Scanners: Abaton 3800, 310, 7 Laser, Apple Laser IIXT, \$2.00 60000 (Mac II), \$20.00.

AR Computing Inc., 201, 2661 West 4th Avenue, Vancouver, B.C. V6Z 1T8. Phone: 736-6571. Fax: 736-9025. IBM, Mac, Imagecenter, Compugraphics 9000, \$2.50.

Changchun Graphics Productions Ltd., 800-445 Centre St., 612-4311, Fax: 611-7199. IBM, Close, Mac, Dicomex Graphics Systems 3200, 1 Dicomex 2 Marks, 1 Laser, Apple Laserwriter, 1 Plotter, Calcomp Plotmaster, 1 Slide Generator, Document Image Recorder \$4.10.

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DESKTOP PUBLISHING SERVICE BUREAUS CONTINUED FROM PAGE 47

puter workstation remote Mac 68000 (Mac Plus or SE) \$4/yr., IBM, 60000 & 60016, \$6/yr. Also, system sales and consulting.

Electronic Inc., 340 Reid St. Phone 684-4773. Fax 684-5743. 4860-6845-6846-6847-6848 (2400 line) IBM, Mac, Any PostScript Output. 1 Laser, Laserwrite II/XT, \$1.1 Imaging, 150000, \$6.50-8.90. RFP 5 Postscript V.40.3, Free download P/U and delivery / No minimum charge. In-house service / file and disk conversion.

One Stop Desktops, 734 West Hastings St., Vancouver Phone 422-3443 Fax 422-4233. 800-482-2387 IBM, Mac, Scanner 1 DESK 2000 FUTURMAC \$16/pg OCR software: 1 DESK 2000 DESKTOP \$2/pg, or \$40/yr. for business. Laser 4 NRG L3000 PS \$1/pg. Imaging: 1 L3000 3000 \$5/pg. Computer Workstation Remote Mac 68000 (Mac Plus or SE) \$6/yr., IBM 60000 \$10/yr.

Quikset Graphics, 44 Blvd. Allen, Vancouver Phone 367-1073. Phone 680-5732; Fax 680-5733, 680-6841-6842. Sales 680-5733. IBM, Mac, Amiga, Atari, all that create Postscript files. Scanner, Term. Data-copy, OCR software: 1 DESK 2000, Accurate Imaging: 1 L3000/115/pg. OCR: 4000/MAX \$1.50/pg. RFP: MAX RFP on CompuShare. Interfax 24/96 line modem. Mac 68000 workstation remote (Mac Plus, Mac SE) \$15/yr.

SeiFCA Code Works, Inc., 3509 Farnsworth Rd., Victoria, B.C. Phone 361-5402 Fax 361-5004 IBM, Mac, Support offered for other brands. Scanner 1 DataCopy 7000 \$5/scan. OCR software: 1 Accurate \$5/pg. Laser 1 QMS PS \$10 \$10-15.75/pg. Interfax/115/pg. 1 QMS PS 2200 \$1.50-2.25/pg. Graphics Workstation Remote Mac 68000 (Mac Plus, SE) \$15/yr.; Mac 68000 (Mac II) \$30/yr.

U & I Type Services, 2390 Pine St., Vancouver Phone 734-2373; Fax 734-2420. IBM, Mac, Imaging: 1 L3000 \$8.00/pg.

Vancouver Desktop Publishing Centre Ltd., Suite 190, 3765 Howe St., Vancouver Phone 2878 Phone 681-6860 IBM 1 Laser, NTX, Cordell, etc. works on request. (Postscript). Specialty in layout books, catalogues & magazines including layout & design.

Westpower Business Services Ltd., 3709 W. 43rd Ave. Phone 222-2001, Fax 222-2425 IBM, Mac, 1 Scanner West 2000, \$46.00, 1 OCR Software, Enduser Pac, \$46.00, 2 Laser 1 HP 1 Apple, \$96 & \$6.00. Mac 68000 (Mac Plus, Mac SE), RFP/yr. IBM 60000, RFP/yr. IBM 60000 (SE/30, RFP, cr), RFP/yr. IBM 60000, \$20/yr.

Wysiwyg Graphics Inc., 490 E. Georgia St., Vancouver, B.C. 123 Phone 684-7466, Fax 684-5463, 684-6723-6847 IBM, Mac, 1 Scanner, 150/25, 1 OCR Software, Output: 1 Laser, NTX, from \$100 2 Imaging: 1 L300 RFP, from \$3.00. Free parking 10 feet from our door. Fast Linotype imaging center in British Columbia. Open 'til midnight Monday to Friday. Variable hours weekends. We stock all Adobe/Linotype fonts.

MAC DTP

Letraset's DesignStudio

Something New or A Disputed
Upgrade of ReadySettle?
— Two Opinions



by West-Server

The DesignStudioSM package isn't obviously on my shelf for two long days before I had a chance to open it. When I finally got time, I happened to be in the mood to discover a wonderful array of typographical and layout possibilities from the latest of desktop publishing packages for the Mac. As a graphic designer, I primarily use PageMaker & Quark XPress for my page design and layout needs, but have been yearning for a program that goes beyond their limitations while combining their most beloved features. DesignStudio has done some of this, and in the process produced a superbly professional program. Typographically it surpasses even the depth of text features found in Ventura Publisher 2.0 on the PC. Unfortunately, it also brings along some of the quirkier interface problems those are with ReadySet, Get, Letraset's earlier desktop publishing package. But DesignStudio brings some fascinating, if not revolutionary, additions to the desktop publisher's fully realized textual objects and a host of useful checks.

See How It Runs

The interface and functions are similar to XPress. To place text on an image on the layout page, you must first draw a box on the screen with the appropriate box tool. Ventura users would feel right at home. DesignStudio offers some very sophisticated alignment capabilities, which begin at the paragraph level and can be applied down to even individual characters. What follows is a listing of the product's more notable features, either by virtue of their functionality or uniqueness to desktop publishing.

The Hot Stuff

This is a feature-packed program! No question — ReadySet/Get!

Typographical Controls

Letter Bar Kicking Tables Kicking is the space between the letters. When done well, kicking makes for easier, quicker reading. The program is the first that I know of to offer adjustable letter-spacing controls. No more line-shifting to get better kicking.

Editable Hyphenation Dictionary DesignStudio offers user-editable hyphenation dictionaries that allow you to

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Vertical Justification: A great feature that gives you a clean, professional text block by creating columns of equal length across the page.

Justified Tab Settings: Are the only one who ever wanted to put tabs in justified text?

Auto Tracking: From the sophisticated, and user-editable, auto tracking functions. This allows you to sequence text for effect, and to fit into tight photos or to compensate for body text looking too broad at display point size.

Up To 327 Point: Users from and looking for an accuracy of reference to the hundredth and fraction thousandths of an inch.

Free Rotation Of Text And Objects: A great "free" rotation tool for text and objects that allows you to rotate individual, or grouped elements in a grid-and-

lines fashion, or from a set point on the page. Editing rotated text is literally a snap — the text block rotates to the horizontal, then springs back to its previous position where you click outside of the boundary.

Grid Alignment: This makes for good tight alignment of all objects to the "layout grid," which means consistent and appealing-looking pages.

Thumbnail Editing: Move pages, single or in groups, in the thumbnail mode (though you lose your "look" info — check!).

Key-based Shortcuts and Macros: Good keyboard shortcuts, including macro-like capacity with glossaries (a sort of pre-arranged and auto-formatted clipboard of text or objects/graphics). You can pop in text or graphics like your logo or a standard phrase, or enter, all in a few quick keystrokes.

Spore Saving Files: Recently made the most for large documents (354 pages, with text and graphics, was only 272K).

Multiple Files Open At Once: The viewing of several documents only opened files. "Go To" Commands: "Go to Page," or "Find Text" features take you directly to

the page or word you want to bypass the mouse. A great shortcut, and a blessing for those afflicted with mouse-draw (jitters!).

Other Good Stuff

Text search and replace (you can even hold the style information)

Visual History: This capability makes for better display of images, since they are not all crumpled in the RAM.

Macro-like Functions: They call these "Glossaries" and they allow you to insert "header plate" text or graphics from a list of straight text, graphic files or even these elements from other DesignStudio™ files.

Font and Image Usage: An invaluable table function that tells you all the fonts and graphic images you have used in the document (which you can now and print out). This saves you time and saves you some money (no drivers or forgotten TIFF image files when it's time to go to the service bureau for high-res output).

To save time when proofing, DesignStudio allows you to suppress printing any image, such as the complex postscript or TIFF files that slow down your printer.

Custom Annotations: Little things like being able to easily customize annotations on line rules are wonderful.

Linking Graphics and Text In Place: Finally, a means to keep things from accidentally being bump-forwarded. You have the capability to lock individual elements or groups of elements so they can't be deleted or altered.

Grouping Objects: Grouping elements objects together is possible, much as in a drawing program like Freehand™ or Illustrator™.

Printing To Disk: If you print a PostScript file to disk, in DesignStudio™ you can strip out unnecessary font header information, saving yourself lots of disk space.

Color Support: Color is supported in DesignStudio™ in quite a bit of depth (though no 4-color separation in-process, quite yet). PLOT Support for Mac II and above.

Grey Scale Support: Extensively built for image Studio-like grey map controls for R2P and TIFF images.

PDF Features: 32 (count 'em) heavy file patterns.

Forget Computers.

Forget Networks.

REMEMBER SOFTRAK!



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The Trepid News

Money flop: This is a money-management application; they increased it 1 megabyte for program operation as well as more complete machine what's really needed. Larger documents result in sluggish performance when test results in complex looking are used at even moderate levels.

Speed: This is not a speedy program, even on an SE/30. Text wrap and other tests started into a geometric. Some slow the program noticeably.

Interface: Interface is not immediately intuitive (e.g. there's no option to print) but implementation of documentation make for a slower learning curve.

The Cold Porridge

Poor Manual: Finding adequate explanation or description is a random event. Confusing interface features is a laborious compile and slow on some basic features, like image saving and search and replace.

Application: Specific characteristics must be removed first before applying new ones. Cluttering backwards one step at a time makes for slow progress.

Auto flow: The program suffers from an awkward approach to the automatic flow of text. In fact, it is not really an auto flow; it is more like: click, click, click, click...

Printer Description: Files A/D are now LPTs and the selection is rather limited. They don't even feature a test run for the Laserwrite 130 and without an LPT you can't get proper crop marks.

Myetionline: Bumping: The program mysteriously hangs, or produces black screens and text that disappears when you place your cursor point on it.

The product has only been out for a month so it should have an immediate upgrade that addresses these problems which detract from an otherwise excellent program.

Love It Or Leave It

If you love free type and are looking for a program with high levels of control over the final product, in a package that more than equals the current standards (PageMaker and XPress), you should consider DesignStudio. For those whose requirements are of desktop publishing software don't overlook great lines — there are more capable packages out there. DesignStudio is aimed at the "Design Professional." If that's your direction, jump on the bus.

Word Stimul: is a Graphic Designer, Artist and Photographer in Vancouver who makes extensive use of computers in the design and production of artwork. He is also principal of V Group Design, and can be reached at 757-4611.

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DesignStudio: A Second Opinion -ReadySetGrumble-

by Josh Gink

With the release of DesignStudio, Letraset has gone beyond the boundaries of a good software upgrade policy. The look and feel of DesignStudio is very similar to that of ReadySetGo! (RSG), a previous Letraset product. Anyone with a working knowledge of RSG will use that DesignStudio has in its regard as a major upgrade of RSG with an outrageous price increase.

I purchased the original program for \$115. There have been almost four major upgrades to RSG and each time they have cost between \$100 and \$200. That purchase was always motivated by the promise that at last, RSG would truly be a professional desktop publishing software package that could not only compete with any other desktop publishing software but have distinctive features that set it apart from and above its competitors.

Because RSG was one of the very first programs I purchased for my Mac, there isn't a single moment of loyalty to it even though the rest of the Macintosh community felt that it was an inferior package to its competitors. Since Letraset took over RSG from its original Macintosh Graphics, the program has steadily been getting better, though it still lagged behind in crucial areas. At the most recent version 4.5, I really anticipated the release of version 5.0 where RSG would finally come to full maturity and be all that it has promised to be.

Letraset has instead decided to release the all-new Studio Line, an integrated set

of tools that is for professional design and production for graphic arts professionals. DesignStudio is, of course, the conversion for the remainder of the new Studio Line. The way is a great marketing plan, to leave behind the "Stimul" image of RSG, but it also leaves out thousands of useful RSG users. The plan apparently is to maintain RSG as it is, by developing the marketing of RSG to business and institutions as a sort of personal-purpose publishing program. However, happened to RSG at the "Stimul" event to use and most powerful desktop publishing package for the Macintosh. ("Quote from RSG 4.5's owner manual")

To be sure, Letraset Canada offered a discount to RSG owners allowing them to purchase the Studio Line products at half of the introductory price. For DesignStudio that was \$95 until Jan. 31, 1990, and after that, \$95. (I did not receive notification of this great deal until after Jan. 31). That is a huge price for what I feel can best be described as a major upgrade. No other major software vendor has attempted this type of program.

Letraset's marketing people may feel that they have chosen the intelligent way to upgrade their position in the professional desktop publishing software market. I think it would be much more intelligent to show more support for those who have shown willingness to support a growing product through the years.

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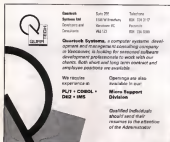
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Desktop Publishing with the Atari ST

by Bruce Rowett

It is unfortunate that the title of this article will categorically cause half of the readers of the publication to skip to the next page. An even greater chance is the fact that many of those people will remain blankly unaware that Atari produces real 41/2" x 5 1/2" dot computers, never mind the fact that they also make laser printers, hard disks and feature a high-resolution display that even writers call "the best text screen to be." The Atari ST series of computers has this reputation, you see, that causes IBM and Mac owners to become snickering idiots. Atari makes great mistakes, too. "They'll tell you that, for instance, that Atari ST is now owned by a business-oriented corporation and as a result a lot of the higher-end software that has moved North America for the Atari ST series bundle from Germany and other European sources. These, however, at a typical computer show will see all the announcements of the professional desktop publisher available for the Atari ST.

As the ST has achieved considerable success in workable sizes, with very low million machines sold, more graphic artists, desktop publishers and educators are discovering the Atari ST as a cost-effective and an abundance of desktop publishing programs and are now looking at the ST as a viable computer with other computers such as the IBM PC or the Macintosh in the production and publication of high-quality documents.

A Look At The Competition

In the IBM and Macintosh worlds, there are several good-quality electronic publishing software and hardware companies—the so-called three-horse band (i.e., QuarkXPress or Ventura Publisher), or published magazine (i.e., PageMaker). Aside from the fact that all of these programs can be made to run on an Atari ST (with corresponding IBM and Mac compatibility options on the sidebars), these programs represent the state of the art, at least in the as personal computer go. Overall, the dominant trend in PC and Mac publishing programs is that the best remain very tightly optimized using a PostScript Laser Printer or PostScript-compatible printing device. Unfortunately, a typical PostScript Laser printer such as the LaserWriter IPr costs about \$3000. These PostScript printers are very productive but output among what are known as outline fonts (character sets) and the advanced graphical manipulations produced by the PostScript page description language.

Owners of PCs and Macs who choose to not use a PostScript printer usually suffer significant degradation in the quality of their printed output, even though the actual resolution (the number of dots per inch) of their non-PostScript printers may be the same. Much of this has to do with the simple arithmetic of the elegant and well-tuned Adobe fonts, however there is no argument from those "in the know" that PostScript printers produce generally better-looking graphic output than their less-expensive counterparts such as the HP LaserJet.

The Atari's built-in operating system is GEM (Graphics Environment Manager) by Regent Research, who also supply GEM for IBM PCs and there are several Atari ST programs that use GEM to produce what I would classify as "business to some

professional" printed results. These titles are usually about \$200 and characteristically support dot-matrix printers of the 1440 x 24-pin variety using the same method of dots and "triple" laser output that Ventana Publisher uses for the QuarkXPress, called GEM for Graphics Device Output Systems. Examples of GEM-based publishing programs for the ST include Time-Works Desktop Publisher (which, like its PC equivalent, is sold by Apple and is a lot like Ventura Publisher), Microtron's First Street Publisher 3.0 and Microsoft's Easy Draw. Another popular ST title is PageStream, which is a very powerful and sophisticated desktop publishing tool. While I have seen some fine examples of this kind of printing, for the purposes of this article, I wish to look beyond those known programs into the deeper waters of "real" no-compromise professional page composition and output.

Now, while a laser printer's GEM output at 300 DPI looks great to the casual observer, it is substantially lower quality than is commonly published in books or magazines. Together with high-quality output from these programs, we must look towards PostScript, at that we may compare the files to the aforementioned typesetting machine. Of course, some of us highly skilled and experienced desktop publishers do make or have "test pages" for environmental proofing and even those of us without laser printers can then take the data to so-called Service Bureaus for final typesetting. PostScript printing has done a 2400 x 2400 resolution 1200 typesetting machine's present of your masterpiece look! In a word... better!

PostScript for Less

Here's a nice surprise! For about \$200, your local Atari dealer will sell you a program called UltraPostScript that gives the Atari Laser printer PostScript compatibility. A version is also available that supports several other types of printers. UltraPostScript is a PostScript interpreter that runs on the Atari ST, Amiga and Mac. UltraPostScript takes through the sample file a little less than 45 seconds. Indeed! This is comparable to the speed of a dedicated PostScript Laser printer. Images are also fine enough to avoid registration marks free from in addition to the ST and other types of printers, which are functionally equivalent and virtually identical to Adobe's PostScript fonts. I printed Adobe's version of these fonts with a Mac and LaserWriter and could not tell the two samples apart.

The Deep End...

In Germany, a program called Calamus is so respected and popular standard in the world of DTP, largely due to a rich feature set that Personal Publishing magazine called "backed each with all page layout programs on the Mac and IBM. Indeed, Calamus has no errors or visible output flaws similar to those seen at Apple's Laserwriting System 7.5 software. Especially when combined with a large-screen monitor such as the Monitors (1280x1024) Viewmaster, the product is ideal results on both the printer and the screen for 100% WYSIWYG. Other major Calamus features include fast scaling from 1 to 999.9 points in tenth of a point increments, style sheet, multiple lettering, complete in-line capabilities, a

CONTINUES ON PAGE 60

ATAUI DTP CONTINUED FROM PAGE 98

includes text editors, 300 elegant text rotation and kern, very fast printing — to the Atari 56K/4M base printer and a wide variety of printers including HP LaserJet and DeskJet, the Adobe program of 300/200 graphics and text will print to the 56K/4M at just over 30 seconds. Try that on a Macintosh!

For all its strengths, though, Calcomp's software would tend to make the professional user without true input/output equipment. Such a situation supports output to resolution up to 3040 x 2048, via an interface directly into LaserJet or ImageWriter. Even more fortunate, such a service is available right here in Vancouver, at a downtown service bureau called The Laser's Edge. You can even monitor them your live on printing! Call that voice line last at (604) 682-5779 for details. Besides offering Calcomp output of resolution up to 1000 DPI, The Laser's Edge offers PostScript output for those ST programs conforming to that (almost) standard of the IBM and Macworld offering LaserJet 300/300 printing, Color PostScript, Laser and color separations from Atari, IBM or Macintosh disks.

An entire Atari Desktop Publishing System including Mega232 computer with 2 megabytes of RAM, 30 meg hard disk, 56K/4M Laser Printer, high-resolution monitor and Calcomp software will set you back about \$3000, less than some PostScript laser alone.

Confusions of An Atari User

Honestly, though, I do all my publishing on an Atari ST and I don't use Calcomp. Why? Because every Macintosh desktop publishing program runs on the remarkable Macintosh hardware for the ST (and Super II). The spec for even these basic programs 70% better than a Mac Plus, on a screen that's 50% higher resolution. (An optional 16 MHz accelerator is available for the ST to further boost performance.) The Specs even supports the Macintosh postscript screen in Macintosh mode. AppleLink has just recently arrived in Canada's Information Systems (about \$2000). I must confess that I find Calcomp's text editors a little bewildering. Furthermore, it is inefficient, without doubt. For wordprocessing, though, I claim a certain fondness for that old serif-based, PageMaker 3.0. It runs perfectly on my Macintosh and Atari and prints PostScript to a wide variety of output devices. From Atari's own LaserJet Laser printer with UltraScript, right up through the LaserJet interfaces of local Mac service bureaus, I don't find the text editors about my Mac. Besides, I just use it to create a Mac-readable disk, then pop that disk into the service bureau's Mac. They can't tell the difference. And if I didn't like the Windows Information Systems of the ST and Mac, I could buy an ST add-on called PC/SP32 that turns the humble Atari into a full-fledged IBM-compatible that runs a top respectable 40 on the Norton index. (That's far more faster than a stock IBM PC.) With PC/SP32, I can run programs like Ventura Publisher, Windows, Microsoft, etc. I am told that The Laser's Edge plans future Atari ST services including PostScript printing direct from Specs-to-Specs, DMS scanning and OCR (TIF currently available). Disk and file conversions (PC/Mac/Atari) and PC/Windows Workbooks remain.

DEATH AND TAXES CONTINUED FROM PAGE 62

software product into two individual packages that mean: GANTAX Personal Tax Software (\$49.95) and GANTAX Plus (\$109.95). The latter also has features geared to the professional tax preparer. The non-professional user, however, should note that a personal tax return must be printed on blue paper acceptable to Revenue Canada and meeting certain printing standards.

Informatica 2000

This program is very user friendly. The screens are easy to understand and look like standard personal income tax forms. Function keys are used to automatically jump to the keypad form or schedule explaining the items on the "schedule" of the tax return. Automatic recalculation sometimes makes this slow, but this feature can be turned off to increase processing speed.

The manual does not provide any income tax information, but on-screen help does include some general tax information.

Informatica 2000 is published by Informatica 2000 Inc., Shawbrooke, Quebec.

taxPREP and CANTAX

As we saw last year, these two programs can satisfy almost any tax situation, available. Both are workable like screens to guide the user through the input of information (compared to Informatica 2000, which is designed for the non-user-oriented family).

CANTAX and taxPREP both use a combination of pull-down menus, function keys and keyboard commands. Both programs allow you to "jump" from one item to another, although this feature is much easier to use in taxPREP than in CANTAX. Batch processing of multiple tax returns can be done with both, as well as coordinated processing of spouses' returns. On my computer, taxPREP prints a little faster, while CANTAX processes data a bit quickly.

New features that year from both packages include Laser Disquette T1 ports. Support for networks is also offered by both, but only CANTAX currently has file locking (so that two users cannot access the same data file at the same time). Automatic collating of multiple copies of returns is now supported by both packages. taxPREP has a Macintosh version already in testing, and it should be on the market for next year.

What To Buy

Again this year, the biggest difference in these three software programs comes down to the price:

Informatica 2000 costs \$159 for a one license, plus a bundle of \$1 per taxpayer with working of \$1100 (Informatica 2000, Scarborough, Quebec).
Personal taxPREP is \$999 plus an additional charge for the taxPREP Information Systems Inc. Sales 402-55 Adelaide St. E., Toronto, Ont. M5C 1K6, 416-595-2960, fax 416-961-9170.

CANTAX Plus sells for \$109.95, and CANTAX Personal Tax costs \$49.95 (CANTAX Corp Ltd., 68 Papez Avenue, Unit 204, Calgary, Alta. T2P 5G6, 403-253-6666).

New device

Linda Segars, C.G.A., is a principal in Hestley, Segars and Co., an accounting firm, 503-553 W 41st Ave., Vancouver V5Z 2M6, 604-268-5212.

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PERSONAL INCOME TAX PREPARATION SOFTWARE

Death and Taxes

by Linda Segement, C.G.A.

Computers can't do much about dying, but they may save you some money at the time.

Yes, it's true once again. Last year I looked at three software products for my computerized personal income tax returns—Canadian Tax Calculator, GATEAX, and taxPREP. This year I have reviewed the two most popular programs, taxPREP and GATEAX, and added one other, SoftwareSource 2000.

were products on the market, including 528d Personal TI Software, GridTax Professional, Personal Taxbyte, Tax MAF, Dr. Tax TI Preparation software and TAXMISER Professional TI System. However, the most "popular" program currently in use, according to a recent survey of members of the Institute of Chartered Accountants, is taxTRIP, with GINTAX coming in second. taxTRIP has also been around the longest. One opinion of note for Unity users is that

ility, published by The GEN-TA Group, at Suite 201, 975 Marine Drive, North Vancouver V7P 1S3. (Contact: Richard Piv.) Tensility runs under a Unix/Tenex software environment.

I am assuming that readers of the article will fall into two distinct groups: the professional user/preparer, and the regular computer user with a few new reasons to prepare for family or friends. For the latter, there is really only one product that is in a price range that makes purchasing sense — CANTAX. This company has sold its personal use

CONTINUES ON PAGE 41

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